

SS FOCUSED TECHNOLOGY: GATEWAYS AND NOS'S

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ABSTRACT

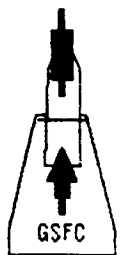
THIS PAPER DISCUSSES THE EXTENSIONS AND ENHANCEMENTS OF THE FIBER OPTIC DATA BUS TECHNOLOGY SUPPORTED BY THE SPACE STATION FOCUSED TECHNOLOGY PROGRAM. THIS INCLUDES THE OPERATING SOFTWARE FOR THE NETWORK CALLED THE NOS (NETWORK OPERATING SYSTEM); GATEWAYS AND GRIDGES FOR MULTIPLE NETWORK TOPOLOGIES; AND VLSI IMPLEMENTATIONS TO SHRINK THE SIZE (AND POWER) OF THE BIU DOWN TO MORE MANAGEABLE DIMENSIONS.

THE NOS APPROACH IS TO EVALUATE EXISTING SYSTEMS AND BUILD UPON THE BEST FOUNDATION AVAILABLE. THE GATEWAY/BRIDGE EFFORT IS TO DEVELOP THE SIMPLEST ELEMENTS BASED AS MUCH AS POSSIBLE ON THE EXISTING BIU'S (BUS INTERFACE UNIT) TECHNOLOGY AND DESIGNS. THE GATEWAY MUST BE MODULAR TO ACCEPT THE "FRONT END" OR PHYSICAL PECULIARITIES OF UNKNOWN DATA BUS MEDIA AS WELL AS MUCH OF LAYER 2 (THE ACCESS PROTOCOLS). IT IS THEREFORE NOT REALLY A SINGLE ELEMENT BUT A SYSTEM OF MODULES THAT CAN BE ADDED TO THE FRAMEWORK MODULE TO CUSTOM TAILOR THE GATEWAY FOR THE TWO PECULIAR NETWORKS INVOLVED. THE VLSI WORK IS INVESTIGATING TWO TECHNOLOGIES: C-MOS FOR THE LOWER SPEED (PARALLEL) LOGIC AND GALLIUM ARSENIDE, GAAS, FOR THE HIGH SPEED (SERIAL) LOGIC.

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G S F C

**FIBER OPTIC DATA BUS
TECHNOLOGY**



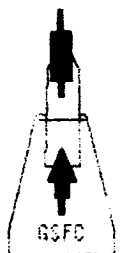
	OAST	SSFT
● STAR BUS TECHNOLOGY	X	
● COMPONENT QUALIFICATION	X	
● NOS/DOS PROTOTYPE		X
● GATEWAY / BRIDGE		X
● VLSI IMPLEMENTATION		X
● FUTURE DIRECTIONS		X

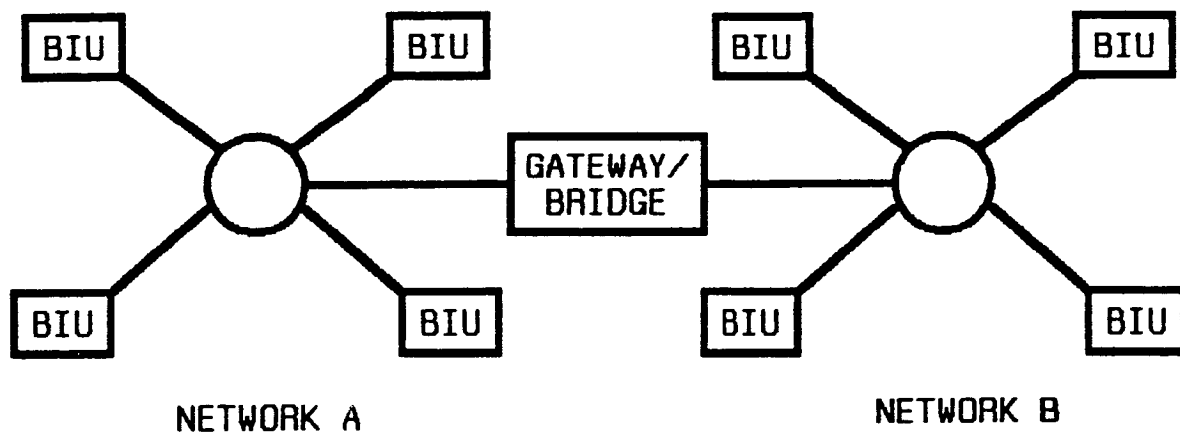


SPACE STATION DATA SYSTEM

PROBLEMS :

1. HIGH BANDWIDTH SENSORS
2. LARGE NUMBER OF USERS
3. CONSTANT TURNOVER OF USERS
4. INDEPENDENCE OF USER OPS
5. TRANSPARENCY TO USER
6. AUTOMATION/ROBOTICS PROCESSING
7. AI (EXPERT SYSTEMS) DATA BASES
8. INDEFINITE LIFE TIME
9. EASE OF INTEGRATION / DEINTEGRATION
10. ISOLATION (SAFETY) OF CORE SYSTEM

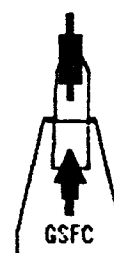




GATEWAY / BRIDGE

TYPICAL CONNECTIONS

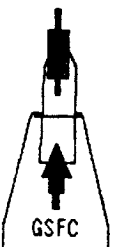
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NETWORK GATEWAY

- o NETWORK GATEWAY PROVIDES THE MEANS TO EXPAND SERVICE TO MORE THAN 32 USERS
- o A CLUSTER OF PASSIVE STAR NETWORKS CAN BE CONNECTED VIA NETWORK GATEWAYS
- o THE DESIGN WILL INCLUDE MESSAGE ROUTING, BUFFERING, INTERNETWORKING PROTOCOLS, ETC.
- o BRASSBOARD BIU WILL FORM BASIS OF THE NETWORK GATEWAY DESIGN

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OF POOR QUALITY**



VLSI IMPLEMENTATION

● LOW SPEED [CMOS]

- PARALLEL LOGIC
- IN HOUSE CUSTOM LSI DESIGN
- CMOS FOUNDRY SUPPLIED

● HIGH SPEED [GAAs]

- SPERRY CONVERSION OF ECL
- ON-GOING EFFORTS :

LEWIS CONTRACT WITH HONEYWELL
(STANDARD CELL)

GSFC CONTRACT WITH ROCKWELL
(ARMY, DARPA, OAST, 8 BIT SLICE)

DARPA CONTRACT WITH MDAC
(2901 BIT SLICE)

